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## Studying Sexual Aggression: A Review of the Evolution and Validity of Laboratory Paradigms

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### Abstract

**Objective**—Researchers have endeavored for decades to develop and implement experimental assessments of sexual aggression and its precursors to capitalize on the many scientific advantages offered by laboratory experiments, such as rigorous control of key variables and identification of causal relationships. The purpose of this review is to provide an overview of and commentary on the evolution of these laboratory-based methods.

**Conclusions**—To date, two primary types of sexual aggression laboratory studies have been developed: those that involve behavioral analogues of sexual aggression and those that assess postulated precursors to sexually aggressive behavior. Although the study of sexual aggression in the laboratory is fraught with methodological challenges, validity concerns, and ethical considerations, advances in the field have resulted in greater methodological rigor, more precise dependent measures, and improved experimental validity, reliability, and realism. Because highly effective sexual aggression prevention strategies remain elusive, continued laboratory-based investigation of sexual aggression coupled with translation of critical findings to the development and modification of sexual aggression prevention programs remains an important task for the field.

### Keywords

behavioral analogues; laboratory paradigms; sexual aggression; sexual assault

Male-to-female sexual aggression remains a significant public health concern in the United States, with approximately 1.3 million women being raped each year, primarily by intimate partners or acquaintances (Black et al., 2011). Despite the public health burden, relatively few sexual aggression prevention strategies have evidence of effectiveness in preventing sexually aggressive acts (for a meta-analysis see Anderson & Whiston, 2005). Although survey studies can provide useful data to inform prevention efforts about the characteristics of sexual assaults and the men who perpetrate them, they cannot fully elucidate causal relationships, particularly those involving proximal situational factors. Thus, investigators have attempted to devise laboratory analogues of sexually aggressive behavior and its precursors to (a) investigate the factors that directly contribute to sexual aggression, and (b) provide appropriate targets for prevention and intervention efforts. This article reviews the types of behavioral analogues and precursor assessments developed over the past several decades.

Sexual aggression is defined as a person engaging in sexual behavior with someone who does not or cannot consent to engage in that behavior (Basile & Saltzman, 2002). In the context of this definition, sexual aggression cannot be directly and ethically measured in the laboratory. That is, if researchers could develop a credible procedure for validly and reliably measuring sexual aggression, the procedure would be unethical because it entails victimization of another person. If this hypothetical procedure were then refashioned such that no one was victimized, then the defining conditions for sexual aggression would not have been met. This is the dilemma.

Over time, a solution to this dilemma has evolved: a multidimensional conceptualization and operationalization of sexual aggression. Although no one experimental procedure constitutes a direct measure of sexual aggression, there are a number of procedures that tap conceptual and operational elements of sexual aggression. Together, these elements form a constellation of constructs and measures that converge on a laboratory-based representation of sexual aggression.

In this article, we provide a review of the laboratory paradigms for measuring sexually aggressive responding (see Table 1). Over the last three decades, numerous laboratory paradigms have emerged to assess either sexually aggressive acts or precursors of sexual aggression. We categorize each paradigm according to whether it has been postulated to analogize a sexually aggressive behavior itself or a precursor to a sexually aggressive act. Our usage of the term *precursor* in this context is specific to proximal experiences and self-perceptions bearing on a perpetrator's capacity to carry out a sexually aggressive act. Therefore, we are distinguishing precursors from more distal background determinants (such as attitudes and personality traits).

Throughout, we evaluate each measure on the basis of the published evidence available for its reliability and validity (see Table 2). Specifically, we examine the content validity of each paradigm according to its congruence with the definition of the behavior or construct it purports to measure. We also assess the published evidence of the analogues' construct (i.e., convergent and discriminant) validity, criterion (i.e., concurrent and predictive) validity,

internal validity, and external validity. Evidence of reliability (e.g., test-retest, internal consistency) is also presented and evaluated for each paradigm.

## Behavioral Laboratory Analogues of Sexual Aggression

### Sexual Imposition Paradigm

In the late 1980s, a laboratory paradigm was developed that involved male participants presenting erotic stimuli to female confederates who were depicted as either liking or strongly disliking pornography (Dermen, 1991). Results indicated that participants showed the erotic slides only briefly to unwilling confederates and longer to willing confederates. An advance of this paradigm was that it simulated sexual aggression more closely than physical aggression paradigms (e.g., shocking an opponent) in that it involved the presentation of potentially unwanted sexual stimuli. It also allowed for other modifications, such as the use of simulated polygraph feedback to manipulate the confederates' level of interest in viewing erotica (Lopez, George, & Davis, 2007). However, a limitation of the Dermen paradigm was that participants were required to present all stimuli whereas real life sexual aggression typically involves a deliberate decision by a perpetrator to impose sexual behavior on a recipient.

To address this limitation, Hall, Hirschman, and Oliver (1994) provided male and female participants a choice of presenting erotic or nonerotic stimuli in an effort to distract a female confederate, who was depicted as strongly disliking sexual material, from a problem-solving task. Seventy-three percent of men showed the erotic stimuli whereas 44% of women showed the erotic stimuli to distract the female confederate, consistent with greater numbers of men perpetrating sexual aggression against women in real life. Limitations of this approach were the demand characteristic to distract the confederate and the higher rates of presenting erotic stimuli to an unwilling female confederate, which did not mirror actual rates of sexual aggression.

In a subsequent study, Hall and Hirschman (1994) addressed the concurrent criterion validity of the paradigm by identifying the most and least sexually aggressive men in a college sample and then asking them to view and then choose to show to a female confederate a neutral, sexual-violent (rape), or violent-sexual (physical assault of a nude woman) film clip. To reduce demand characteristics and increase internal validity, instructions to the participant were minimal, and the confederate's preferences (e.g., dislike of pornography) were not presented nor was there a pretense for showing the film clips (e.g., distraction). Among the sexually aggressive men, 52% showed one of the violent videos whereas only 8% of the nonaggressive men showed one of these videos. In a variation of this paradigm, one third of male participants with a history of sexual aggression showed a sexually aggressive film clip to a female confederate whereas only 11% without a history of sexual aggression did so (Mitchell et al., 2002).

In an effort to model sexually aggressive behavior that does not involve physical violence, the paradigm was modified such that participants had a choice of showing a sexual clip or a nonviolent clip to a female confederate portrayed as strongly disliking pornography. In a longitudinal study, Hall and colleagues (Hall, DeGarmo, Eap, Teten, & Sue, 2006) found

that 25% of male participants who reported engaging in sexual aggression both at baseline (Time 1) and a year later (Time 2) showed the sexual film whereas 13% of men who were not sexually aggressive or reported sexual aggression only at Time 1 or Time 2 showed the sexual film. In support of the convergent and discriminant construct validity of this paradigm, those who showed the sexual film were more likely than those who showed the nonsexual film to indicate that the confederate disliked the film and was uncomfortable and upset by the film, but they did not differ in their ratings of her attractiveness.

Overall, the sexual imposition paradigm demonstrates moderate content validity regarding its congruence with sexually aggressive behavior in that it involves showing sexual or sexually aggressive stimuli to someone depicted as strongly disliking such material. That noted, “dislike” of material is not necessarily “nonconsent.” Future studies could improve the content validity of this paradigm by having the female confederate convey clear nonconsent to viewing the sexual stimuli. As the sexual imposition paradigm has evolved, researchers have demonstrated its internal and external validity, as well as its concurrent criterion validity and convergent and discriminant construct validity, thus supporting the validity of this paradigm as a laboratory analogue of sexually aggressive behavior. Although demonstration of test–retest reliability is difficult because of the use of confederates and subsequent need for thorough participant debriefing, future studies should explore ways to demonstrate the reliability of this paradigm as well as its predictive validity regarding future engagement in sexually aggressive behavior.

### **Integrated Sexual Imposition Paradigm**

Subsequent work has merged the foundational aspects of the imposition paradigm with emerging sexual aggression prevention strategies. Specifically, a new wave of research that engages the power of bystanders in preventing sexual aggression (for reviews, see Fabiano et al., 2003; Lonsway et al., 2009) has gained substantial traction in the field. In fact, numerous prevention approaches currently exist that are founded upon decades of research on bystander intervention (for a review, see Fischer et al., 2011), and some bystander prevention programs result in short-term (Gidycz, Orchowski, & Berkowitz, 2011) or longer-term decreases in men’s dating violence against women (Miller et al., 2013). However, the evidence base for their application to sexual aggression prevention is very limited.

In a step toward building the necessary evidence base for these prevention strategies, Parrott and colleagues (2012) adapted Hall’s paradigm to develop an integrated laboratory paradigm of sexual aggression and bystander intervention. The fundamental aim of this integrated paradigm was to create an environment within the laboratory which allows for a man to be sexually aggressive, but also allows a male peer to intervene to prevent it. To accomplish this, Hall’s paradigm was modified in two key ways: (a) participants comprise male friend dyads who engage in the task together, and (b) after each dyad member makes an individual decision to show a nonsexually explicit or a sexually explicit film clip to an unwilling female confederate, they are required to agree upon a single film clip to show the woman. These modifications provide the opportunity for dyadic interactions to occur that mirror naturalistic male peer interactions, wherein a man intends to perpetrate sexual aggression and a male peer has the opportunity to prevent or be complicit with that act. In addition to the

assessment of participants' individual and dyadic decisions, dyadic interactions can be coded to identify behaviors that are associated with a successful or unsuccessful bystander intervention.

Complete results from Parrott and colleagues' (2012) validation study will not be reviewed here; however, of particular importance is that theoretically- and empirically based risk factors for sexual aggression (e.g., a history of perpetration, endorsement of misogynistic attitudes) and bystander intervention (e.g., bystander self-efficacy) predicted sexual aggression and bystander intervention to prevent that sexual aggression (respectively), demonstrating both concurrent criterion and construct (convergent and discriminant) validity for this paradigm. Preliminary results also found that bystander self-efficacy was associated with successful bystander intervention by facilitating men's likelihood of "speaking out" against sexual aggression to their peer (Purvis, Miller, Parrott, & Swartout, 2012). In sum, the integrated version of the sexual imposition paradigm is commensurate with the original version in terms of its demonstrated content, criterion, construct, internal, and external validity, and its reliability.

The paradigm is limited because participants are required to actively and explicitly agree upon a sexually aggressive or nonaggressive decision. In the typical real-world scenario, a bystander recognizes that a male is in the process of perpetrating sexual aggression (e.g., from expression of intent to the enactment of the behavior) and has the option to do nothing or to intervene. Future adaptations are necessary to better model this scenario. In addition, the processes which underlie bystander apathy (e.g., diffusion of responsibility, evaluation apprehension) are less likely to influence peer-based bystander behavior (e.g., Latané & Nida, 1981). Thus, this paradigm and its adaptations should be extended to nonpeer dyads. Despite these limitations, this novel approach to the assessment of sexual aggression and bystander intervention opens a new door in the field by allowing for the experimental control and manipulation of variables directly relevant to the *prevention* of sexual aggression.

### Denial of Access to Sexual Stimuli

In another type of behavioral analogue, Bushman and colleagues (Bushman, Bonacci, van Dijk, & Baumeister, 2003) measured men's reactions when a female "actor" (actually a confederate) denied them access to sexual stimuli by refusing to read a sexually explicit passage aloud. Participants were then asked how much payment the woman should receive for her acting and whether or not she should be rehired. Results revealed that men high in narcissism were more punitive toward the reluctant female actor than were men low in narcissism, which suggests that this paradigm has convergent construct validity and underscores the importance of assessing the moderating effects of attitudinal and personality variables in these behavioral analogue paradigms. The high degree of experimental control also confers high internal validity. That noted, the extent to which this paradigm fully captures the content of the sexual aggression construct is questionable (i.e., low content validity), because the primary dependent measure involves participants' nonsexual retaliation toward the confederate. Demonstrations of reliability and other forms of validity are also lacking for this paradigm.

## Behavioral Analogues of Sexual Aggression Summary

Although sexual imposition behavioral analogues of sexual aggression have demonstrated various types of validity, future research using longitudinal prospective designs that assess the predictive validity of these paradigms would further substantiate the utility of these methods. Although the use of confederates necessitates a thorough debriefing of participants that precludes accurate assessments of test–retest reliability, future research could ascertain the internal consistency of these paradigms through the use of repeated measures within the same experimental session.

## Laboratory Investigation of Precursors to Sexual Aggression

Several laboratory measures have been developed to assess precursors of sexual aggression. These measures do not assess sexually aggressive acts (e.g., showing an unwilling female confederate sexual material); instead, they capture an individual's capacity or inclination for being sexually aggressive. The detection of elevations in these precursors is proposed to be associated with an increased likelihood of engaging in a sexually aggressive act.

## Sexual Arousal, Phallometric Assessment, and Rape Indices

Myriad laboratory studies have measured the degree of sexual arousal exhibited during presentations of stimuli depicting sexually aggressive content (e.g., see review by Clegg & Fremouw, 2009). Although disagreement persists about the relative contributions of sexual versus nonsexual (e.g., power) motives in sexual aggression, researchers generally agree that sexual arousal to such stimulus depictions is an important precursor, indicative of a man's preference for nonconsensual sex. The strong form of this sexual preference hypothesis asserts that sexual aggressors prefer nonconsensual sex over consensual sex; the weak form asserts that aggressors prefer nonconsensual sex more than nonaggressors. Because self-reports of sexual arousal are vulnerable to falsification, researchers have relied on phallometric assessment to measure changes in penis circumference during stimulus presentation, conferring strong content validity.

Numerous phallometric assessment studies have been conducted to compare how categorical sexual aggression characteristics (e.g., adjudicated vs. unadjudicated rapists) are associated with phallometric response to various thematic depictions (e.g., nonconsensual violent sex vs. nonconsensual nonviolent sex). Methodologically, this research has generated important procedural standardization options to increase internal validity. There are multiple standardized stimulus sets varying in presentational formats (e.g., video vs. audio), number of thematic content categories (e.g., violent vs. nonviolent nonconsensual sex), and number of exemplars per category (i.e., several different stimuli depicting similar thematic content). There are protections against faking nonresponse to target content and protections against faking response to nontarget content. There are also standardized scoring metrics, such as the rape index (dividing the mean response to rape stimuli by the mean response to consensual stimuli). Despite the availability of these various options, a lack of consensus remains about which standardizations are best, creating considerable methodological variability across studies (Laws, 2003).



Although skeptics continue to contest the forensic, clinical, and research utility of phallometry (e.g., Marshall, 2006), evidence from these studies generally provides support for the concurrent criterion validity of phallometric assessment, although the reliability of these measures is untested (Hall et al., 1993). Meta-analytic (Hall et al., 1993; Lalumière & Quinsey, 1994) and qualitative (Clegg & Fremouw, 2009) reviews of the studies focusing on rape have indicated support for the weak form of the sexual preference hypothesis. That is, while rapists do not reliably prefer rape stimuli over consensual stimuli, they reliably prefer rape stimuli more than nonoffenders, suggesting that these methods are externally valid. Importantly, phallometric assessment protocols are proving valuable in generating more granular insights about theoretical explanations of rape. For instance, phallometric assessment protocols have enabled theorists to drill down from a broader psychopathy explanation (indifference to the suffering of others) to distinguish two paraphilic explanations: biastophilia or preferential rape (arousal to cues of victim nonconsent) versus sexual sadism (arousal to cues of violence, pain, and injury; Harris, Lalumiere, Seto, Rice, & Chaplin, 2012). Fostering important implications for diagnosing paraphilias, these protocols have also been used to evaluate nonrapist sexual sadists in specifying the centrality of violence versus nonconsent cues in their arousal patterns and demonstrate convergent and discriminant construct validity, as well as concurrent criterion validity (Seto, Lalumiere, Harris, & Chivers, 2012). Although more research is needed to establish the predictive validity and reliability of these methods, these protocols nonetheless remain an important tool for assessing arousal-related precursors to sexual aggression.

### **Interest in Sexually Aggressive Stimuli**

George and Marlatt (1986) developed a laboratory paradigm adapted from earlier work on assessing interest in pornography in which participants' viewing time of slides depicting neutral, erotic, violent, and violent-erotic stimuli was recorded unobtrusively. An innovation of this approach was the identification of participants' relative interest in sexual, aggressive, and sexually aggressive stimuli based on viewing time. Further innovations to enhance internal validity included the following: (a) disentanglement of viewing times, response times, and stimulus complexity; and (b) use of an unobtrusive measure not reliant upon self-report. Although findings provided evidence of content validity for viewing time as a measure of interest in stimulus content, this study did not provide information regarding other forms of validity or reliability. Future research that assesses the reliability and validity of this approach could enhance its utility for investigating sexual aggression precursors.

### **Misperception of Women's Sexual Intent**

Misperception of sexual intent refers to one's assessment or judgment that another person's interest in pursuing sexual activity with either oneself or a third party is more or less than it actually is (Haselton, 2003). This misperception is associated with an increased risk for sexual aggression as men may make sexual advances toward a woman whom they incorrectly perceive as sexually interested. In the first study of this phenomenon (Abbey, 1982), an unacquainted male-female college student dyad (i.e., the actors) had a 5-min conversation about their experiences in college while being watched through a one-way mirror by an unacquainted male-female participant dyad. Findings demonstrated that men rated the female actor as more promiscuous and seductive than did women. This seminal

study was followed by several others which modified the original procedure by increasing conversation duration, using confederates, presenting written vignettes or videos rather than live interactions, and adding an alcohol administration procedure (e.g., Abbey & Harnish, 1995; Abbey, Zawacki, & Buck, 2005; Abbey, Zawacki, & McAuslan, 2000; Edmondson & Conger, 1995; Saal, Johnson, & Weber, 1989; Shea, 1993; Shotland & Craig, 1988).

In a related line of research, experimental studies have examined perceptions of targets' sexual intent by manipulating characteristics of the targets, including whether they are categorized as friendly versus sexually interested or whether they are dressed conservatively versus provocatively (Abbey, Cozzarelli, McLaughlin, & Harnish, 1987; Cahoon & Edmonds, 1989; Farris, Treat, & Viken, 2010; Farris, Treat, Viken, & McFall, 2008). In these studies, participants are asked to view images of targets in the laboratory and then rate them on a number of dimensions, including perceptions of how sexy, seductive, friendly, and sexually interested the targets appeared. Results generally suggested that female targets were perceived as more sexual when they wore more revealing clothing compared with nonrevealing clothing (Abbey et al., 1987; Cahoon & Edmonds, 1989). In one study, men were more likely than women to misperceive friendliness as sexual interest; however, they also misperceived sexual interest as friendliness more often than women (Farris et al., 2008). A recent study employed a within-subjects design in which male participants were shown photographs of friendly and sexually interested targets, half of which were provocatively dressed, when participants were sober and then again when they were intoxicated (Farris, Treat, & Viken, 2010). Men were less able to discriminate friendliness from sexual interest when intoxicated than when sober; however, intoxication did not predict men's ability to discriminate between the conservative versus provocatively dressed targets.

Several studies (Farris, Treat, & Viken, 2010; Farris, Viken, & Treat, 2010; Treat, McFall, Viken, & Kruschke, 2001) have borrowed theory and analytic techniques from cognitive science to further advance the experimental examination of men's perceptions of women's sexual interest. Of note is the application of General Recognition Theory (Ashby & Townsend, 1986), an extension of Signal Detection Theory (Green & Swets, 1966), to better operationalize men's perceptual and decisional processes when presented with experimental stimuli (Farris, Viken, & Treat, 2010), and multidimensional scaling techniques which provide a multidimensional spatial representation of men's perceptual organization of the experimental stimuli (Treat et al., 2001).

Significant effort has been made to ensure the internal validity of these experimental procedures by pilot testing target stimuli (Abbey et al., 1987; Farris et al., 2008; Farris, Treat, & Viken, 2010) and extensively training and coding confederates' behavior for adherence to the study protocol to establish consistency across experimental sessions (Abbey et al., 2005). This paradigm has strong content validity, and convergent construct validity was supported in that greater acceptance of rape-supportive and stereotypic attitudes toward women as well as hostile masculinity were positively associated with perceptions of sexual intent (Abbey & Harnish, 1995; Bondurant & Donat, 1999; Jacques-Tiura, Abbey, Parkhill, & Zawacki, 2007); however, no known studies have examined discriminant construct validity. Several studies have demonstrated concurrent criterion validity in that greater sexual intent has been perceived by men with a history of sexual assault perpetration



compared to those without a history of sexual assault perpetration (e.g., Abbey et al., 2005; Shea, 1993). However, a link between misperception and subsequent behavior (i.e., predictive criterion validity), a link between perceptions of sexual interest in the laboratory compared to real world settings (i.e., external validity), and reliability have yet to be demonstrated in the literature.

### **Sexually Aggressive Intentions in Hypothetical Scenarios**

Hypothetical scenario paradigms involve a respondent estimating whether he would engage in sexually aggressive behavior given a particular set of hypothetical circumstances. Such paradigms capture behavioral intent or inclination rather than actual enactment of behavior. The use of these scenarios allows investigators to manipulate particular aspects of the setting, the victim, or other variables while keeping other factors constant, thereby enabling causal conclusions about experimental effects.

In one of the first measures of sexual aggression likelihood using a hypothetical framework, Malamuth, Haber, and Feshbach (1980) presented male undergraduates with an acquaintance rape scenario written in the third person. Participants were then asked to rate their likelihood of behaving like the rapist (a) under a similar set of circumstances and (b) if they were assured they would not be punished for their behavior. These and similar items eventually evolved into the Attraction to Sexual Aggression Scale (Malamuth, 1989a). Data indicate that this scale is reliable (i.e., internally consistent) and demonstrates both convergent and discriminant construct validity (Malamuth, 1989b).

Others have expanded this use of third-person rape scenarios to assess the influence of situational, attitudinal, and personality variables on self-reported sexual aggression likelihood. For example, using a written scenario, Norris and Kerr (1993) found that alcohol intoxication and hypermasculinity were associated with a higher likelihood of behaving like the hypothetical perpetrator. As technology has progressed, some investigators have utilized third person video scenarios to assess sexual aggression likelihood (e.g., Noel, Maisto, Johnson, & Jackson, 2009). Third person scenarios have also been used to examine situational, personality, and attitude effects on other dependent measures, including response or decision latency (Marx & Gross, 1995). In this paradigm, participants listen to an audiotape that depicts a dating situation which eventually ends in an acquaintance rape. As the scenario unfolds, the woman's refusals and the man's aggression escalate. Participants are asked to stop the tape when they believe the man should stop making sexual advances, and the latency of this decision is measured in seconds from the beginning of the scenario. Studies using this construct have manipulated a variety of situational variables, including prior sexual activity between the hypothetical dating couple (Marx & Gross, 1995), participant alcohol consumption (Marx, Gross, & Adams, 1999), and character alcohol consumption (Bernat, Calhoun, & Stolp, 1998). Sexual aggression history and calloused sexual beliefs are associated with longer decision latencies (Bernat, Calhoun, & Adams, 1999), indicating both concurrent criterion and convergent construct validity.

Because research that uses third-person scenarios may result in underestimates of sexual assault risk (Cue, George, & Norris, 1996), some investigators have utilized scenarios written in the second-person to address these perspective effects. In these scenarios, the

participant is instructed to project himself into the situation he is reading as if he were the protagonist. In studies involving alcohol administration, the participant is also instructed to imagine himself in the situation at his current level of intoxication (Davis, 2010). The participant reads the scenario as if it were currently happening to him, as well as answers dependent measures, such as his sexual aggression intentions, embedded throughout the scenario as it unfolds.

Although the sexual assault scenarios discussed here are hypothetical, researchers have endeavored to maximize their internal and external validity. For example, Noel and colleagues (2008) conducted four separate studies with the target population that included focus groups, assessments of written scenario scripts, and assessments of video scenarios, to develop and validate their video-based scenarios. Moreover, Bernat, Stolp, Calhoun, and Adams (1997) conducted multiple studies to verify the convergent and discriminant construct validity and test-retest reliability over a 2-week period of the decision latency construct. Although these processes are labor- and resource-intensive, they help ensure that the content of the scenarios is received by the target sample as intended by the investigators. Studies have demonstrated that participants do indeed report that these scenarios portray realistic events that could happen to them in their daily lives (Davis, 2010; Davis et al., 2012), suggesting their ecological validity. Across these studies, research has demonstrated that precursor assessments using hypothetical scenarios maintain content validity, internal and external validity, concurrent criterion and construct validity (both convergent and discriminant), and reliability (both test-retest and internal consistency). To date, however, the predictive validity of these methods has not been established. Future research involving experimental hypothetical scenarios followed by longitudinal assessment of real-world sexual aggression would significantly advance the field in this regard.

### **Implicit Precursors to Sexual Aggression**

The study of precursors to sexual aggression largely has been limited to self-report measures, which likely results in underreports of aggression. Recent innovations have extended social psychology paradigms such as the Implicit Association Test (IAT, Greenwald, McGhee, & Schwartz, 1998) to examine implicit associations predictive of men's sexual aggression (Rudman & Mescher, 2012). The authors found that men's implicit objectification and dehumanization of women were associated with their self-reported rape proclivity and that dehumanization was also associated with a rape-behavioral analogue consisting of selection of sexually violent versus violent images. These tasks evidenced content validity, convergent, and discriminant construct validity. Other studies using implicit measures have demonstrated their concurrent criterion validity with sexual aggression (e.g., Zurbriggen, 2000), although their predictive validity regarding sexually aggressive behavior remains untested. Because the IAT has evidenced internal and external validity, reliability (both internal consistency and test-retest), and predictive validity (e.g., Greenwald, Poehlman, Uhlmann, & Banaji, 2009), sexual aggression-specific IATs should continue to be developed. Use of such unobtrusive assessment methods is highly warranted given the influence of social desirability on self-report measures of sexual aggression-related constructs.

## The Validity Dilemma: Review and Supporting Evidence

There has been much debate about the validity of sexual aggression laboratory paradigms and laboratory aggression experiments generally (e.g., Anderson & Bushman, 1997; Berkowitz & Donnerstein, 1982; Ferguson, 2007; Giancola & Chermack, 1998; Tedeschi & Quigley, 1996). The central objection to laboratory aggression paradigms is that they measure behaviors that are artificial, unrealistic, and lack correspondence to “real world” sexual aggression. This criticism essentially favors external over internal validity and more specifically champions mundane realism, or the extent to which events in the laboratory setting are likely to be experienced in participants’ everyday lives. In response, scholars (e.g., Anderson & Bushman, 1997; Berkowitz & Donnerstein, 1982; Mook, 1983) have repeatedly and convincingly argued that the validity of laboratory aggression paradigms rests not in their mundane realism but, rather, in their ability to engage and impact participants (i.e., experimental realism) and invoke psychological processes that occur in real life (i.e., psychological realism). It is these psychological processes that we seek to generalize and not the specific features of a given setting, method, or manipulation.

In light of this debate, the reviewed literature provides compelling evidence for the validity of laboratory-based measures of sexual aggression. For instance, the sexual imposition behavioral analogues exhibit content validity, as participants’ behavior subjects women to an unwanted sexual experience. Construct validity has also been demonstrated via the correlation of laboratory-based sexual aggression with theoretically and empirically based risk factors for sexual aggression (e.g., personality factors). The sexual imposition behavioral analogues also possess a degree of criterion validity in that all the measures correlate with self-reports of actual perpetration of sexual aggression. A limitation of these behavioral analogues is that predictive validity—the association between the laboratory act and subsequent real world sexual aggression assessed longitudinally—has not thus far been established, a clear goal for future research.

Precursor assessments consistently possess high internal validity, which is a reflection of standardized protocols and coding procedures as well as clear operational definitions (e.g., physiological response, reaction time). Content validity has also been well-demonstrated across this class of assessment methods. Evidence of construct and criterion validity of precursor assessments is more variable, with the most consistent support for sexual arousal, hypothetical scenarios, and implicit measures via correlations with pertinent situational, personality, and attitudinal variables. External validity has been demonstrated by the sexual arousal and hypothetical scenario paradigms. There also exist notable limitations to these methods. Like behavioral analogues, the predictive validity of precursor assessments has yet to be established. And, with the exception of hypothetical scenarios, the reliability of these methods is untested.

Apart from validity issues, there are important strengths notable with laboratory measures of sexual aggression. First and foremost, they can be deployed in the context of experiments, which enables investigators to discern the causal impact of key putative determinants of sexual aggression, a distinct advantage over survey methods and correlational designs. Second, laboratory measures enable more detailed and granular consideration of

mechanisms that potentially mediate the effect of a known determinant (e.g., acute alcohol intoxication, peer influence) on sexual aggression. Third, these measures enable simultaneous consideration of background moderating factors ranging across multiple levels of analysis (e.g., genetic, personality, attitudinal, cultural), thus permitting investigators to address the interplay of both distal and proximal factors contributing to sexual aggression. This complicated interplay better mirrors real world sexual aggression. Finally, these measures have important implications for intervention purposes, as is already being witnessed with the bystander intervention protocol.

## Human Subjects Considerations

Use of any of the reviewed laboratory measures requires approval from one's local institutional review board (IRB), which is entrusted with ensuring the safety of human subjects. Given that many of the procedures central to these paradigms heighten concern regarding risk to participants (e.g., deception), it is critical that researchers take appropriate steps—many times beyond that to which they are accustomed—to ensure the safety of human subjects. For this reason alone, it is not surprising that researchers who study sexual aggression may choose alternative assessment methods that pose fewer potential subject risks and are thus typically associated with a more straightforward IRB application and approval process. Nevertheless, there are scholars who successfully use the reviewed laboratory methods through established procedures that minimize the possible or perceived harms to research participants. In the authors' experience, there are several concerns most likely to be cited by IRBs in the review of this work; however, our collective experience and recent data suggest that these concerns have little evidence base. Below, we review these concerns and show that they are rarely, if ever, realized.

Deceptive procedures can interfere with participants' ability to give informed consent and could potentially lead to emotional or psychological ill effects (e.g., feeling inadequate because they were "tricked"). However, research indicates that less than 2% of participants in laboratory-based studies of physical aggression report distress in response to the use of deception (Parrott, Miller, & Hudepohl, in press). A likely reason for such low rates of participant distress is the use of written and verbal debriefing procedures. Specifically, effective debriefing includes a structured script that (a) mentions the typical deception rates in the laboratory to normalize any negative effects of being deceived, and (b) provides numerous opportunities for participants to discuss their reactions to the study and ask questions. Indeed, debriefing should go beyond participants' receipt of a written debriefing form without explanation, as may be more common in studies that pose less risk. The aim of the debriefing process should be to explain clearly the necessity of deception and to provide the opportunity to alleviate any residual concerns.

Other concerns cited by IRBs are that participants may realize that they are more likely to be sexually aggressive than previously thought (i.e., inflicted insight) or that participation may actually "prime" aggressive behavior after leaving the laboratory. A recent study of nearly 400 undergraduate men who completed a laboratory-based physical aggression task detected extremely low levels of inflicted insight (1%) and no reports of heightened aggression as a result of participation (Parrott et al., in press). Although there exists no published data on

participants' experience of inflicted insight during engagement in laboratory-based sexual aggression tasks, unpublished data from the Parrott and colleagues' (2012) study found no report of an increased likelihood of physical or sexual aggression toward women as a result of participation. Despite the low likelihood of adverse outcomes, postdebriefing strategies should be used to broadly assess participants' negative reactions to the experimental protocol. This will allow such reactions to be immediately addressed and resolved by the experimenter. Researchers can also account for participants who do not communicate these reactions by providing contact numbers of local mental health or counseling centers. In addition to protection of human subjects, considerations for protecting female confederates are discussed elsewhere (George et al., 2006).

## Implications for Prevention and Intervention

Despite the wealth of research on the etiology of sexual aggression, very few primary prevention programs have been shown to prevent sexually aggressive behavior. To date, in rigorous evaluations only two programs (*Safe Dates*, Foshee et al., 1998; and *Shifting Boundaries*, Taylor et al., 2013) and the funding associated with the 1994 U.S. *Violence Against Women Act* (Boba & Lilley, 2009) have evidence of preventing and/or decreasing sexually aggressive behavior (for review see DeGue et al., 2014). Although young adults are arguably at highest risk for victimization and perpetration, these programs have been evaluated for youth in 6th to 7th (*Shifting Boundaries*) or 8th to 9th (*Safe Dates*) grades, limiting the effective programs available for implementation among collegiate, community, or military young adults.

After examining the richness of etiological data that laboratory studies of sexual aggression provide the field, it is disappointing that so few of the findings have been used to inform the development or modification of prevention strategies. Laboratory behavioral analogues of sexual aggression transcend some of the measurement limitations of self-report instruments and also allow for the controlled recreation of high risk situations that would otherwise be unethical in real-world settings. Translation of these findings into prevention is sorely needed and may be one avenue the field needs to expand the menu of "what works" to prevent sexual aggression. For example, laboratory behavioral analogues may be used to examine the effects of prevention programs. Because of the expense and difficulty associated with following program participants to assess changes in sexual assault incidence as a result of program participation, many prevention programs fail to measure changes in sexual aggression and instead measure immediate changes in attitudes (Anderson & Whiston, 2005). To address this limitation, individuals who receive and do not receive a program subsequently could participate in a laboratory behavioral analogue of sexual aggression to assess the program effects on behavior. Similarly, given the complex associations between alcohol use and sexual aggression perpetration (Testa, 2002), prevention programs could be evaluated or refined by using behavioral analogues of sexual aggression to determine whether and how program participants are able to use the skills to prevent sexual aggression (e.g., communication, bystander intervention, conflict resolution) while the participant or their peer is intoxicated. The relatively rapid assessment of sexually aggressive behavior and controlled environment offered by laboratory studies could help overcome limitations of current program evaluations by offering alternatives to long-term follow-up of program

effects and by providing methods for developers to understand the circumstances in which skills taught in programs are most likely to be used by participants. Ultimately, rigorous evaluations with long-term follow-up of sexually aggressive behavior would be needed for a program to be deemed effective, but in the development and refinement of programs, laboratory studies offer alternative methods for evaluating program efficacy and may help identify promising programs that warrant more rigorous evaluation.

## Research Implications and Future Directions

As described in this review, there are a variety of validated techniques to assess sexually aggressive behavior and its precursors in the laboratory. No single laboratory paradigm will be appropriate for every study; rather, investigators should consider which method is best suited for testing their particular theoretical constructs within their population of interest. Moreover, innovations in the field, such as the development of virtual reality paradigms for assessing sexual aggression-related constructs (Abbey, 2012), will continue to expand the range of these options even further. Although costly and labor-intensive to develop, such advances may further improve our ability to create immersive, dyadic interactions in the laboratory. As the field of sexual aggression laboratory research continues to evolve, the rigor, precision, realism, and validity of these studies continues to improve, yielding essential knowledge regarding the causes and contributors to sexual aggression and providing useful insights for prevention efforts.

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**Table 1****Laboratory Paradigms Pertinent to Sexual Aggression**

<b>Paradigms</b>	<b>Dependent measures</b>	<b>Self-report</b>	<b>“Victim” presen</b>
Behavioral analogues			
Sexual imposition	Presentation of unwanted sexual or sexually violent stimuli	No	Yes
Integrated paradigm	Presentation of unwanted sexual or sexually violent stimuli	No	Yes
Denial of access	Punitive responses to woman’s denial of access to sexual stimuli	No	Yes
Precursor assessments			
Sexual arousal	Phallometric assessment of arousal to sexually aggressive stimuli	No	No
Sexual interest	Viewing time of sexually violent stimuli	No	No
Sexual misperception	Ratings of women’s sexual interest	Yes	Sometimes
Hypothetical scenarios	Sexual aggression likelihood/intention ratings; Decision latency responses	Yes	No
Implicit associations	Automatic associations (e.g., women & animals)	No	No

**Table 2****Evaluation of Reliability and Validity for Sexual Aggression Laboratory Paradigms**

Paradigms	Content validity	Internal validity	External validity	Construct validity		Criterion validity		Reliability
				Convergent	Discriminant	Concurrent	Predictive	
Behavioral analogues								
Sexual imposition	Yes	Yes	Yes	Yes	Yes	Yes	Not tested	Not tested
Integrated paradigm	Yes	Yes	Yes	Yes	Yes	Yes	Not tested	Not tested
Denial of access	No	Yes	Not tested	Yes	Not tested	Not tested	Not tested	Not tested
Precursor assessments								
Sexual arousal	Yes	Yes	Yes	Yes	Yes	Yes	Not tested	Not tested
Sexual interest	Yes	Yes	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested
Sexual misperception	Yes	Yes	Not tested	Yes	Not tested	Yes	Not tested	Not tested
Hypothetical scenarios	Yes	Yes	Yes	Yes	Yes	Yes	Not tested	Yes
Implicit associations	Yes	Not tested <sup>a</sup>	Not tested <sup>a</sup>	Yes	Yes	Yes	Not tested <sup>a</sup>	Not tested <sup>a</sup>

<sup>a</sup> Although these forms of validity and reliability have been demonstrated for the general implicit associations test, they have not yet been demonstrated with regard to the version specific to sexual aggression.